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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,030	10/14/2005	Millind Diwakar Atrey	038871.55852US	3490

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EXAMINER	
KASTURE, DNYANESH G	

ART UNIT	PAPER NUMBER
4147	

MAIL DATE	DELIVERY MODE
01/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,030	ATREY ET AL.	
	Examiner	Art Unit	
	DNYANESH KASTURE	4147	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 June 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *17 Feb 05, 03 Aug 07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Page 11 of the specification refers to "Figure 6" which has not been furnished. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "61" in Figure 3 has been used to designate both the supplied equipment and the square element within the bracket/parenthesis. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the

sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "31". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities: Page 11 refers to Figure 6 in the first line. However, no such figure has been furnished.

6. Reference character 31 does not refer to any feature in any of the drawings.

7. It is recommended that applicant review the specification again for other potential informalities.

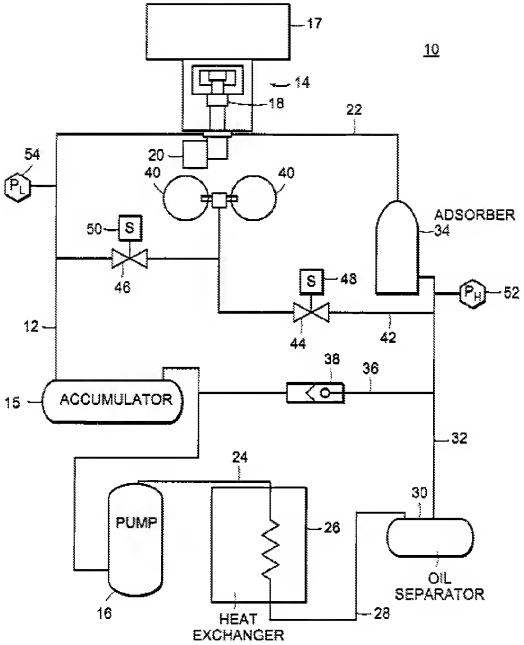
Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1, 2, 3, 4, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morse et al (US Patent 6,530,237 B2) and in view of Klusmier (US Patent 4,693,736 A).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ACCUMULATOR
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24
30
PUMP
26
OIL
SEPARATOR
16
HEAT
EXCHANGER
28

FIG. 4

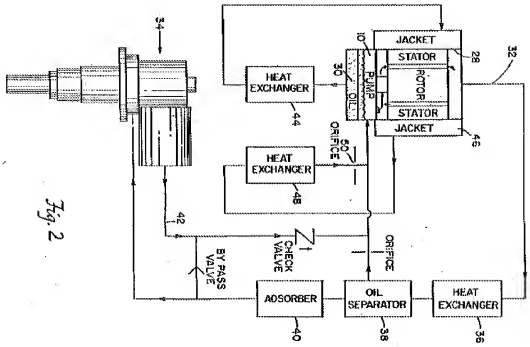


Fig. 2

10. In Re claim 1, with reference to Figure 4 above, Morse et al discloses a pumped helium circuit (column 3, lines 25-29) comprising:

- a compressor (16)
- high pressure port which is inherent to the compressor pump outlet
- low pressure port which is inherent to the compressor pump inlet
- supplied equipment (17)
- compressed helium is supplied through line (22) and returns from line (12)
- a pressure relief valve (38) which opens in response to a predetermined

pressure differential linking the high and low pressure ports as stated in column 3, lines 55-60: "When the pressure of the helium within the supply line 32 reaches a certain

point beyond the pressure necessary to overcome the bias against the valve, the valve opens to allow helium to flow from the helium supply line to the helium return line 12.."

- With regards to "means for preventing oil carry-over from the compressor to the supplied equipment, characterized in that said means comprises means for preventing oil leaving the low pressure port and traveling towards the supplied equipment" within claim 1, this limitation meets the three prong test per MPEP 2181 and thereby invokes 35 USC 112 6th paragraph. The means for preventing oil carry-over from the compressor to the supplied equipment has been disclosed in the specification as an oil trap or an oil adsorber which prevents oil from leaving the low pressure port and travels towards the supplied equipment. Morse et al discloses an accumulator (15) which provides a "Buffer" as stated in column 3, line 31. The accumulator (15) is therefore the corresponding element for an oil trap or oil adsorber.

11. However, Morse et al does not disclose a non-return valve located between a low pressure side of the pressure relief valve and the supplied equipment.

12. Nevertheless, Klusmier discloses a cryogenic refrigeration system comprising a "Check Valve" in Figure 2 depicted above, which is a non return valve.

13. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the pumped helium circuit of Morse et al to incorporate the check valve of Klusmier in the helium circuit between a low pressure side of the pressure relief valve and the supplied equipment for the purpose of separating the oil from the mixture as stated in column 1, lines 13-14 of Klusmier.

14. In Re claims 2 and 3, Morse et al discloses an accumulator (15) between the low pressure port of compressor (16) and the supplied equipment (17) as discussed above.

15. In Re claim 4, Morse et al discloses a gas reservoir (40) between the low pressure port of compressor (16) and the supplied equipment (17).

16. In Re claim 5, Morse et al discloses a gas reservoir (40) located near to the accumulator (15). The accumulator (15) is equivalent to an oil adsorber. The gas reservoir (40) and the accumulator/oil adsorber (15) together are located between the low pressure port of the compressor (16) and the supplied equipment (17) in the circuit.

17. In Re claim 8, the apparatus disclosed by Morse et al modified by Klusmier as applied to claim 1 is inherently capable of performing the method as claimed. Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986).

18. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morse et al (US Patent 6,530,237 B2) and Klusmier (US Patent 4,693,736 A) as applied to claim 1, and further in view of Kanai et al (US Patent 6,321,544 B).

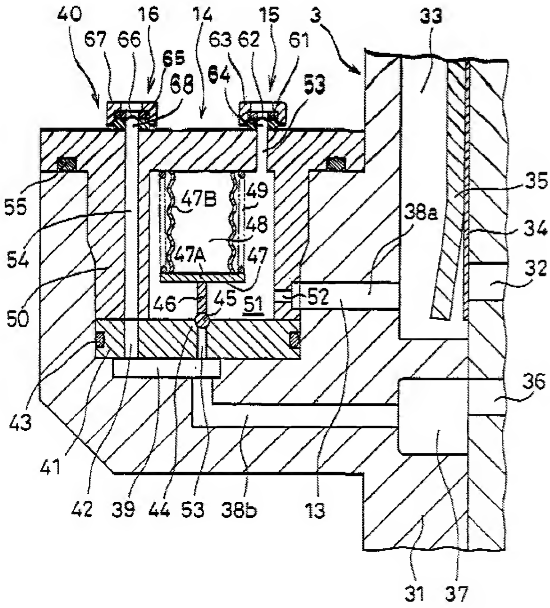
19. In Re claim 6, Morse et al modified by Klusmier as applied to claim 1 discloses all the claimed limitations except for a pressure actuated switch in the circuit between the low pressure part and the supplied equipment operable to stop compressor operation in response to low pressure port pressure falling below a minimum value.

20. Nevertheless, Kanai et al discloses a refrigeration cycle with a "..low-pressure rupture disk which ruptures when the pressure in the low-pressure line is at the fourth specific pressure level..": in column 3, lines 26-28. The low pressure rupture disc is the equivalent of a pressure actuated switch. Also, Kanai discloses in column 3, lines 21-23: "..stops the means for driving the compressor when the level of the pressure detected by the pressure sensor is equal to or lower than the third specific pressure".

21. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the pumped helium circuit of Morse et al modified by Klusmier to include a means for driving the compressor in the circuit in conjunction with the low pressure rupture disk which stops the operation of the compressor when the pressure falls below a minimum value in the low pressure line as taught by Kanai et al for the purpose of "safety, which is provided to protect the compressor from any damage" as stated in Kanai et al column 3, lines 14-15.

22. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morse et al (US Patent 6,530,237 B2) in view of Kanai et al (US Patent 6,321,544 B).

FIG. 2



23. In Re claim 7, as discussed above, Morse et al discloses a pumped helium circuit (column 3, lines 25-29) comprising:

- a compressor (16)
- high pressure port which is inherent to the compressor pump outlet
- low pressure port which is inherent to the compressor pump inlet
- supplied equipment (17)
- compressed helium is supplied through line (22) and returns from line (12)
- a pressure relief valve (38) which opens in response to a predetermined pressure differential linking the high and low pressure ports as stated in column 3, lines 55-60: "When the pressure of the helium within the supply line 32 reaches a certain point beyond the pressure necessary to overcome the bias against the valve, the valve opens to allow helium to flow from the helium supply line to the helium return line 12.."

24. However, Morse et al does not disclose that the pressure relief valve is connected directly to the compressor from the high pressure port.

25. Nevertheless, in Figure 2 depicted above, Kanai et al discloses a valve element (45) between the bypass passage (38a) (originating at the high pressure side) and bypass passage (38b) inside the compressor. The valve (45) is operable to return compressed helium from the high pressure port back to the compressor through internal bypass passages (38a) and (38b) in response to a predetermined pressure differential.

26. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the compressor disclosed by Morse et al to include the valve element and bypass passage configuration of Kanai et al for the purpose of "safety,

which is provided to protect the compressor from any damage" as stated in Kanai et al, Column 3, lines 14-15.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Klusmier et al (US Patent 4,831,828 A) discloses a cryogenic refrigerator circuit with a check valve.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DNYANESH KASTURE whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Nguyen can be reached on (571) 272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dnyanesh Kasture
Examiner
Art Unit 4147

DGK
/George Nguyen/
Supervisory Patent Examiner, Art Unit 4147